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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/598,406	06/21/2000	Gerhard Hoppen	016790/0398	6205
22428	7590	04/29/2004	EXAMINER	
FOLEY AND LARDNER SUITE 500 3000 K STREET NW WASHINGTON, DC 20007			CHANG, AUDREY Y	
			ART UNIT	PAPER NUMBER
			2872	
DATE MAILED: 04/29/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/598,406	<b>Applicant(s)</b> HOPPEN, GERHARD	
	<b>Examiner</b> Audrey Y. Chang	<b>Art Unit</b> 2872	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 February 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20, 22 and 24-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20, 22, and 24-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Remark*

- This Office Action is in response to applicant's amendment filed on February 5, 2004, which has been entered into the file.
- By this amendment, the applicant has amended claims 1, 7, 19, 22 and 24.
- Claims 1-20, 22, and 24-28 remain pending in this application.

### *Response to Amendment*

1. The declaration filed on February 5, 2004 under 37 CFR 1.131 has been considered but is ineffective to overcome the rejection concerning the rejections under 35 USC 112, first paragraph.

The declaration still fails to provide the *essential features required* for allowing the objective lens by having the lens elements made of quartz and fluorite, which has different dispersion property for light in DUV and IR ranges, to focus light having wavelength in that ranges to focus at the same point. The evidence submitted is insufficient to establish applicant's alleged actual reduction to practice of the invention in this country or a NAFTA or WTO member country after the effective date of the Hayashi et al reference. The evidence submitted is further insufficient to establish applicant's alleged actual reduction to practice of the invention **before** the effective filing date of the instant application.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. **Claims 1-18, 19-20, 22, 24 and newly added claims 25-28 are rejected under 35 U.S.C. 112, first paragraph**, as containing subject matter which was not described in the specification in such a way as to **enable** one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Art Unit: 2872

The specification **fails** to teach how could the objective simply having *lens elements made of quartz and fluorite* (which are very common lens materials) and with a *biconcave configuration penultimate lens element*, with the radius on the object side be smaller than the radius on the image side, is capable of allowing the light having wavelength in deep ultraviolet and light having wavelength in infrared *to be focused at the same point*. **Claims 1, 19, and 24 have been amended** to include the feature having a *further lens element* for receiving light from the penultimate lens element. However this amendment **does not** provided the **essential criterion** for having the light of very different wavelength to be focused at the same point. The specification and the claims **fail** to teach the *essential* element or *critical* features that **allow** the objective to focus light of deep ultraviolet and infrared wavelengths at same point. The wavelength ranges for deep ultraviolet (in the range of 200 to 300 nm) and for infrared (above 760 nm). They are very different from each other. The lens materials in general have different refractive indices in the two wavelength ranges, which essentially will make the light beam with different wavelengths *to be refracted differently, (i.e. dispersion property of the lens material will make the objective lens not to have same focal point for both wavelength range naturally)*. It is therefore **not obvious** why would the light having very different wavelengths to be focused at the same point.

Clarifications are required. Claims 2-18, 20, 23 and 25-28 inherit the rejection from their respective based claim.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. **Claims 19-20, 22 and 26-27 are rejected under 35 U.S.C. 112, second paragraph**, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "IR laser autofocus system ... *to provide* the IR wavelength" recited in claim 19 is confusing, in error and indefinite since it is not clear how can an autofocus system provide a wavelength

Art Unit: 2872

which is a number. The autofocus system is capable of *focusing an incident light* but it *does not* generate a light not to mention to generate a wavelength. Claim 20 inherits the rejection.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 1, 2, 5, 6, 17-18, 19-20, 24 and newly added claims 25, 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Hayashi (PN. 5,121,255) in view of Hecht et al (Optics, Addison and Wesley 1979, pages 186-191).**

Hayashi teaches an **objective system** for *microscope* that is usable with light in *far ultraviolet* (or deep ultraviolet), *visible and infrared wavelength regions* wherein the objective lens system comprises *a plurality of lens elements made of quartz and fluorite* and with *the penultimate lens element* (23, Figure 4) having *a biconcave configuration*. Hayashi teaches explicitly that the biconcave configuration of lens made of quartz, having negative power, and the biconvex configuration of lens made of fluorite, having positive power, which makes the objective system capable of *correcting chromatic aberration* in the operable wavelength ranges, which includes the deep ultraviolet, visible and the infrared wavelength ranges, (please see Figure 4, column 6, lines 1-9). It is known in the art that *chromatic aberration* of the lens system is the main factor causing the lens system to have different focal length for light of different wavelength. The disclosure concerning the correction of chromatic aberration and the same materials used for the objective system therefore *implicitly* suggests that the same focal point for light in the deep ultraviolet and in the infrared wavelength regions can be achieved. However it would also have been

Art Unit: 2872

obvious to one skilled in the art to apply the standard teachings of Hecht et al, particular with the formula (6.50), to design the lens system to have the same focal point for light having deep ultraviolet and infrared wavelength, for such technique is standard and quite well known in the art, and for the benefit of allowing the light having different wavelength to focus at the same point which will therefore reduce the size of the optical system using the objective system. It is a standard knowledge in the art that near infrared light has wavelength greater or equal to 760 nm and deep ultraviolet light has wavelength to be within the range of 200 to 300 nm. Although this reference does not teach explicitly that the radius of curvature for the biconcave penultimate element (23) at the object side is smaller than the image side, however such feature can be easily modified when calculating the lens designs to achieve the same focal points as stated above.

**Claims 1, 19 and 24 have been amended** to include a further lens element for receiving light from the penultimate lens element. This feature is met by the disclosure of Hayashi since by definition the penultimate lens element has a further lens element to receive light from it, (please see Figure 4).

With regard to claim 17, near infrared light has wavelength ranges as far as 3000 nm. With regard to claim 18, although the Hayashi reference does not teach explicitly about the focal length, however by the standard knowledge of Hecht et al it would have been obvious matters of design choice to one skilled in the art to design the focal length to assume the claimed value for the benefit of providing desired focus function.

With regard to claim 19, these references do not teach explicitly to use the objective with an autofocus system. However such difference is mainly referred to how to use the objective and since infrared autofocus system is quite well known in the art such modification would have been obvious to one skilled in the art for the benefit of providing automatic focus means.

With regard to claims 25-28, the Hayashi reference also does not teach explicitly that the objective has a numerical aperture of 0.9. However numerical aperture depends on the index of refraction of the medium and the angle extend of the objective lens, such feature is therefore either inherently met

Art Unit: 2872

by the disclosure or an obvious modification to one skilled in the art when designing the objective lens in terms of the teachings of Hecht.

***Response to Arguments***

8. Applicant's arguments filed on **February 5, 2004** have been fully considered but they are not persuasive. The newly amended claims have been fully considered and they are rejected for the reasons stated above.

9. The applicant is respectfully reminded that *the specification, claims and applicant's arguments have not provided or identified the essential features for making the coincidence of the focal points for the light having a wavelength in deep ultraviolet and the light having a wavelength in the infrared range to occur. The facts that the two wavelengths are so different and the lens materials in general have none identical index of refraction for different wavelength ranges, which gives up different dispersion properties, make it not obvious that the focal points for light in very different wavelength ranges to be the same. If this feature, as argued by the applicant, is "well-known" or within general skill of the worker in the art according to the standard textbook teachings (such as Hecht) then such feature is not considered to novel and it holds no patentable weight since it is within general skill of the art and such design is considered to be obvious matters of design choice. If such is not the case, the applicant therefore is respectfully required to provide the "essential feature" or critical feature for achieving such coincidence. The declaration submitted by the applicant does not provide the essential feature as required.*

In response to applicant's arguments, which state that the feature concerning the radius of the biconcave lens element is not obvious since the prior art does not disclose such, the examiner respectfully disagrees. *Biconcave lens* is a very well known lens element in the art, the radius concerning the two concave surfaces are well know factor for designing the biconcave lens to have the desired convergent/divergent power, (the applicant is respectfully advised to confer standard textbook such as Hecht et al). One skilled in the art, with the general knowledge in the art, in particular the lens formula

Art Unit: 2872

and the computerized lens design program will be able to design the biconcave lens with the desired radius to achieve the desired convergent/divergent function. Such modification is therefore obvious to one skilled in the art and is not a ground for patently distinct it from the prior art.

*Conclusion*

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

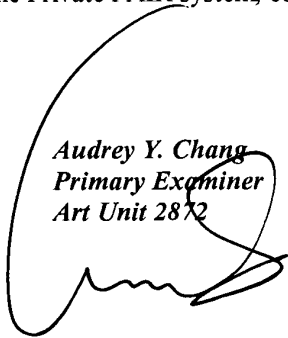
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



Art Unit: 2872

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Audrey Y. Chang*  
*Primary Examiner*  
*Art Unit 2872*



A. Chang, Ph.D.